IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

BEARBOX LLC and AUSTIN STORMS,　)
　　　　　　　　　　　　　　　　　)
　　　　　　　　Plaintiffs,　　　　)
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　　　　　　　　　　　　　　　　　)　C.A. No. 21-534-GBW-CJB
　　　　v.　　　　　　　　　　　　)
　　　　　　　　　　　　　　　　　)
LANCIUM LLC, MICHAEL T.　　　　　)
MCNAMARA, and RAYMOND E.　　　　)
CLINE, JR.　　　　　　　　　　　　)
　　　　　　　　　　　　　　　　　)
　　　　　　　　Defendants.　　　　)

DEFENDANTS' PROPOSED FINDINGS OF FACT

Dated: January 25, 2023

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TABLE OF ABBREVIATIONS

Abbreviation	Description
'433 Patent	U.S. Patent No. 10,608,433 (TX1)
'632 App. or '632 Application	International Application No. PCT/US20 18/0 17950, published as WO 2019/139632 (TX163)
Baer	Mr. Nicolas Baer
Cline	Dr. Raymond (Ray) Cline
DF	Defendants' Proposed Findings of Fact
the Dinner	The May 3, 2019 dinner attended by Austin Storms and Michael McNamara
Ehsani	Dr. Mark Ehsani
ERCOT	Electric Reliability Council of Texas
GAM	Great American Mining
Hakes	Mr. Benjamin Hakes
Lancium	Lancium LLC
LMP	locational marginal price
LR	load resource
McCamant	Mr. Frank McCamant
McClellan	Dr. Stanley McClellan
McNamara	Mr. Michael McNamara
MPT	Minimum Power Threshold as construed by the Court
PF	Plaintiffs' Proposed Findings of Fact

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Plaintiffs	Mr. Austin Storms and BearBox LLC
POA	Power Option Agreement as construed by the Court
POSA	person of ordinary skill in the art
Ps' Br.	Plaintiffs Opening Post-Trial Brief (D.I. 256)
RTMB	real-time market balancing
Storms	Mr. Austin Storms
Storms' Drawing / the Drawing	The drawing attached to Austin Storms' May 9, 2019 email to Michael McNamara (TX157.03 / TX171 at 14750 / TX887 at 92)
Storms' Email / the Email	The May 9, 2019 email that Austin Storms sent Michael McNamara (TX157 / TX887, TX887-1 / TX170-TX175)
Storms' Spreadsheet / the Spreadsheet	The spreadsheet/.csv file attached to Austin Storms' May 9, 2019 email to Michael McNamara (TX157.08-.25 / TX175 / TX887 at 97, TX887-1)

DUPLICATE EXHIBITS

Lancium Deck - I Squared	TX266 / TX778
Storms' Email / the Email	TX157 / TX887, TX887-1 / TX170-TX175
Storms' Drawing / the Drawing	TX157.03 / TX171 at 14750 / TX887 at 92
Storms' Spreadsheet / the Spreadsheet	TX157.08-.25 / TX175 / TX887 at 97, TX887-1
Storms/Hakes Text Messages	TX14 / TX947
Storms/McNamara Text Messages	TX742 / TX950

I.   MCNAMARA AND CLINE INDEPENDENTLY INVENTED THE '433 PATENT

1.   Michael McNamara is the CEO and a co-founder of Lancium. Tr. 532:25-533:3. McNamara is not a lawyer and does not understand the rules of claim construction, but does understand that a patent is a legal document. Tr. 605:4-19.

2.   Raymond (Ray) Cline has a B.S. degree in chemistry and a Ph.D. in chemical physics. Tr. 432:6-7, 432:12-16. He has computer programming experience and experience with smart grid technology. Tr. 432:17-434:2. During the 2015-2017 timeframe, Cline personally mined Bitcoin and became familiar with the terms used in Bitcoin mining and their meanings, including "miner hashrate"/"hashrate," "global hashrate"/"network hashrate," "network difficulty," "block height," and "Bitcoin price." Tr. 434:3-435:22. Cline is a co-founder of Lancium. Tr. 435:23-25.

3.   Lancium's Initial Vision. Lancium was formed in November 2017 (Tr. 436:12-14; 533:4-5), with the initial vision to put flexible datacenters (*e.g.*, Bitcoin miners) next to wind farms (*i.e.*, co-locate) to take advantage of the highly variable power output of windfarms. Tr. 437:11-438:16; TX373; TX374 at 25182; Tr. 541:21-542:15; TX266 at 20054. When power prices were high, Lancium would ramp down to allow the wind farm to sell that power to the grid, but when power prices were low the flexible datacenters would ramp up. Tr. 438:10-439:16; TX374 at 25182; Tr. 533:22-534:16; TX372 at 25166; Tr. 539:9-540:21, 541:5-20; TX266 at 20049. This co-location was behind-the-meter and such that Lancium would agree

to curtail based on real-time signals so the windfarm could capture high-priced hours. Tr. 546:13-22. In 2018 and 2019, Lancium performed analyses of how much "uplift" (*e.g.*, how much more value) windfarms would receive under Lancium's proposal, Tr. 546:17-547:2, 551:24-552:17; TX176, including for Glidepath in 2018. Tr. 547:15-548:1; TX478; Tr. 548:10-549:17; TX233; TX234 at 18300; TX795.

4.   Lancium's Technology And The Conception Of The '433 Patent. From the beginning, Lancium focused on protecting its inventions. TX374 at 25182; Tr. 536:14-537:12; TX778 at 20042. One of its early patent applications was WO 2019/139632 ("the '632 application"), which named both McNamara and Cline as inventors and has a priority date of January 2018. TX163 at Cover.[1] Figure 6 depicts the flexible data center (200) connected to the wind farm, as well as connections to the local power substation (690) and the grid (660). Tr. 441:13-442:7; TX163 at Fig. 6; *see also* ¶¶53-54. Figure 2 shows the individual computing systems (100) of the flexible datacenter organized into racks and subsets (240), as well as a datacenter control system (220), which may be a computing system configured to "dynamically modulate power delivery to one or more computing systems (100)." Tr. 442:8-443:8; TX163 at Fig. 2, ¶¶22, 30, 33, 38. Lancium would have an agreement with the wind farm stating the maximum amount of power Lancium could use, but if directed by an operational directive or via a determination based on monitored conditions,

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[1] Lancium has other patent applications. Tr. 537:13-539:8; TX164-TX166; TX767.

including economic conditions, Lancium would control its computing systems on a granular level (i.e., control on the individual computing system or collections of computing system level) to ensure that its systems consumed less power. Tr. 444:16-445:19; TX163 at ¶¶22, 33. Lancium, therefore, monitored directives from the wind farm (and potentially the grid operator) indicating how much power Lancium could consume. Tr. 445:2-446:10; TX163 at ¶¶68, 90, Fig. 9. This monitoring included receiving information such as forecasts affecting the price of power and "economic considerations" such as the real-time price of power, the price of Bitcoin, and other information enabling Lancium to determine whether it was profitable to mine. Tr. 446:11-448:6; *see also* Tr. 542:16-544:5; TX594 at 33410. In sum, by Spring 2018, Lancium conceived of monitoring conditions, determining when a ramp-up condition was met based on economic, reliability, and/or operational conditions, setting a strategy based on a targeted power consumption, and instructing the computing systems to perform computational operations. Tr. 448:10-23; TX163 at Figs. 4, 9, ¶¶42, 44, 68-72.

5.   By the Summer and Fall of 2018, Lancium was operating 120 miners at its Thomas Road R&D Facility ("Thomas Road") in Houston. Tr. 448:24-450:3-21; TX462, TX463 at 27993. To control the miners, Lancium modified off-the-shelf software from ServiceNow and Tier44. Tr. 451:9-452:9. The system at Thomas Road was monitoring information, including power and Bitcoin price, to determine

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a performance strategy based on whether it was profitable to mine Bitcoin.[2] Tr. 467:24-468:4. Based on such information, including the network/global hashrate, Lancium calculated the "Breakeven Price" for different types of miners (*see* Tr. 469:13-470:11; TX222; TX223)—a well-known metric—and used that to determine when to turn different miners on or off. Tr. 470:12-471:1, 472:6-473:4, 477:18-20, 478:12-479:2 (referring to TX345 at 24902 (point 4)).[3] Lancium successfully demonstrated its live system (120 miners) for an investor (SBI Holdings) in September 2018. Tr. 459:16-461:14; TX189 at 15148-49; Tr. 464:14-465:4; TX176 at 14628-29; Tr. 465:5-466:13-468:4; TX179; TX180. Lancium also conceived of monitoring Locational Marginal Price, ERCOT parameters, and weather conditions (Tr. 471:2-472:5), and controlling its systems remotely from, for example, its Network Operating Center (NOC) (Tr. 463:24-464:13; TX176 at 14629) or via a mobile computing device at this time. TX163 at ¶¶29-30; TX189 at 15148-149.

6.   Ultimately, Lancium decided to terminate its contract with Tier44 and develop its own software internally. Tr. 479:3-480:21; TX291; Tr. 477:18-478:11; TX345 at 24901 (point 1). By Spring 2019, Lancium used its internally-developed software as

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[2] Lancium also became a market participant in ERCOT to enable Lancium to obtain data that could affect its decision-making (*e.g.*, power price data) more quickly. Tr. 544:6-545:7; TX711; TX712.

[3] Lancium was also looking at "configurable algorithms" to permit it to prioritize certain computing workloads over other workloads because a traditional computing client may be willing to pay more to have their jobs done faster. Tr. 452:10-453:13; TX199; TX200 at 16282; see also Tr. 453:19-454:19; TX165 at ¶53.

its primary platform for miner control. Tr. 481:12-482:16. Lancium investigated

using API's to pull LMP data from ERCOT by April 2019. Tr. 480:22-481:11;

TX501. And by May 1, 2019, Lancium's Soft Load Control was (i) monitoring

signals from a wind farm, ERCOT, from the miners themselves (*e.g.*, actual power

utilization), Bitcoin price, real-time power price, hashrate, and block height, (ii)

using that information to determine a target power level, and then (iii) sending

instructions to some or all of the miners to suspend or restart their hashing

algorithms. Tr. 482:17-484:6; TX320 at 24330-32. The software was called the

Lancium Brain and eventually became Lancium Smart Response. Tr. 484:7-17;

TX320 at 24330-31. The software would receive the Load Limit Setpoint ("LLS")

(*i.e.*, the maximum amount of power Lancium could use (a "maximum power

threshold")) and then determine whether to use all, some, or none of that available

power based on economic and other considerations. Tr. 484:18-487:7; TX320 at

24331-332. The software would also adjust to changes in the LLS within the

compliance period as shown in Figure 4-1 of TX320 at 24333-34.

7.   Through portions of 2018 and into 2019, Lancium worked with various

companies in connection with designing and manufacturing a mining container. Tr.

454:20-455:17, TX371 at 25037; Tr. 455:18-456:24, 457:7-17; TX979). As of May

1, 2019, Lancium was considering purchasing 40 foot, 2MW boxes holding ~1428

miners that met applicable safety/security standards for a cost of around $230K from

JV Driver/Ready Engineering. Tr. 475:5-24; TX781 at 21534; Tr. 552:23-553:24.

8.   Lancium's Expansion Into Grid-Connected Applications. Lancium's investigation into applying its technology to grid applications began by at least May 2, 2019 when, at lunch with Jamie McAvity and Justin Nolan, McNamara learned that participating in demand response programs could effectively discount the price of power from the grid. Tr. 556:22-558:13, 559:3-15; TX748. McNamara continued the discussion with McAvity on May 3, 2019 at the FCAT conference. Tr. 559:19-560:2. McAvity attended the dinner that evening. Tr. 113:10-114:12, 560:3-14. After additional discussions with McAvity (Tr. 569:3-10; TX748-750), discussions with Calpine (Lancium's Thomas Road electricity provider) (Tr. 570:5-21; TX626 at 33800), and an introduction to and exchange of materials with a consultant, Jay Young (Tr. 570:21-571:24 TX437, TX438 at 26309-311; Tr. 571:25-572:11; TX740; TX741), Lancium was introduced to MP2, which became Lancium's QSE when Lancium qualified as a LR. Tr. 572:11-573:18; TX496; TX497 at 30580.

9.   On August 26, 2019, Lancium received an "award" under the LR ancillary service program (TX 982; *see also* TX981), which indicates the award in MW for a 24 hour period for ADK (ERCOT's resource designation for Thomas Road). Tr. 492:15-494:5; TX982. After this, Cline realized that the "award" was actually "an obligation on [Lancium's] part, that we consume that amount of power that ERCOT COULD curtail" (Tr. 494:17-496:14; TX526), which led him to understand and

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appreciate that being grid connected and being obligated to consume the awarded power was "an entirely different concept of operation" than Lancium was previously doing. Tr. 496:8-25. Now there was a minimum amount of power than Lancium "had to consume" and ERCOT, not Lancium, had the option to dispatch (curtail) Lancium's power. Tr. 496:22-25. If Lancium were to do economic dispatch (self-curtailing for economic reasons), Lancium had to develop its strategy to ensure that at least the awarded amount of power (*e.g.*, the minimum power threshold) was used, regardless of profitability. Tr. 497:1-499:5; TX526; TX310; TX595. This appreciation and subsequent strategy development in late August/early September 2019 is the conception date for the "power option agreement," "power option data," and "minimum power threshold" related limitations of the '433 patent. Tr. 695:20-696:6. Cline and McNamara further refined these concepts over the next months (*see, e.g.*, TX298; Tr. 499:6-20), and also realized that Lancium's software was so sophisticated that Lancium could qualify as a CLR, which it did thus becoming the first load-only CLR within ERCOT. Tr. 499:21-501:3. Lancium filed the patent application on October 28, 2019 (TX167) that ultimately issued as the '433 patent naming McNamara and Cline as inventors. Tr. 501:4-15; TX1.

10.   <u>Power-Sell Back.</u> In August 2019, Calpine responded to an inquiry from Lancium regarding a fixed price agreement (Lancium had always used month-to-month index pricing) given "how close we are to all time historical lows." Tr.

573:21-574:21; TX758; TX122. Calpine performed a "look back" analysis indicating Lancium could reduce its power price by $10 per MWh. Tr. 574:13-575:4; TX763; TX764; *see also* Tr. 575:12-25. On August 14, 2019, Lancium entered into a fixed price addendum with Calpine. Tr. 576:1-3; TX756; TX757. Section 4.2.2 of the 2019 addendum contained a standard, non-negotiated sell-back provision. Tr. 576:8-17; TX757. This same provision was contained in section 4.3.2 of the 2018 addendum (Tr. 576:18-577:6; TX122 at 35638), which Lancium had not appreciated because then it had not pre-purchased power and thus could not sell it back. Tr. 577:7-13. The change to a fixed price agreement with Calpine and the standard contract language was how Lancium learned of sell-back, not from Storms (Tr. 566:20-25, 577:10-15, 578:2-5, 578:23-579:5), as is reflected in McNamara's email (TX567 "This is cool…") and spreadsheet TX568. Lancium also updated a slide deck to reflect sell-back as "Power Arbitrage." Tr. 578:13-579:3; TX471 at 30066.

11.   McNamara and Cline conceived the '433 patent's inventions without using any information provided by Storms. Tr. 501:16-25, 580:1-11, 690:20-691:3.

II.   STORMS IS NOT AN INVENTOR OF THE '433 PATENT

12.   BearBox was founded by Austin Storms in late 2018 (Tr. 106:22-107:2; TX899) and only ever sold one of the BearBox containers—at a loss. Tr. 132:7-11. Today, BearBox makes no products, has one employee (Storms), and has no assets. Tr. 110:1-7. Storms has a B.S. degree with a focus on geography. Tr. 110:10-12.

Storms currently works for Galaxy Digital as the VP of Mining Operations. Tr. 109:14-16. Prior to that Storms worked for Great American Mining. Tr. 109:2-13.

A.   McNamara's Happenstance Meeting of Storms

13.   Storms first met McNamara on May 3, 2019 at a cocktail mixer following the Fidelity FCAT conference on cryptocurrency mining (Tr. 79:3-5), which Storms attended to try and sell his mining containers. Tr. 110:13-111:7. Before the May 3, 2019 conference, Storms did not know about Lancium and had never met or heard of McNamara. Tr. 116:13-17. After the cocktail mixer, a group of approximately eight people, including Storms and McNamara, went to dinner. Tr. 113:10-13, 216:12-14. Storms remembered the names of the other dinner attendees. Tr. 113:10-114:10; *see also* Tr. 560:3-14.

14.   The atmosphere of the Dinner, which lasted around 1.5 to 2 hours, was a casual business dinner with friendly competitors talking shop. Tr. 114:13-20, 115:16-17, 561:5-93. Storms sat across the table from McNamara, they both spoke to others, and both spoke in a normal tone of voice. Tr. 115:7-15, 116:18-19, 561:5-562:1. They were not "huddled up … in a private conversation" and did not discuss demand response programs or ancillary services. Tr. 561:24-562:1, 562:25-563:2. Storms, who drank more than one glass, described the dinner as involving "several bottles of wine." Tr. 115:3-6, 120:10-14; TX947 at 4002 (5/6/19 at 11:29am).

15.   Storms and McNamara exchanged contact information at the Dinner and

thereafter communicated by text message. TX742. The two had discussed Storms' box over dinner and McNamara wanted to know the price and obtain the specs. Tr. 563:3-12. In the text chain, McNamara told Storms that his boxes might have some benefits versus the ones Lancium was doing with JV Driver, indicated that Lancium was also looking for a Product Manager (PM), and said "[l]ots of stuff to collaborate on," as was McNamara's normal phrase when speaking with new people. Tr. 563:18-564:9; TX742; *see also* Tr. 535:15-22 (TX372 at 25159), Tr. 548:2-9 (TX478); Tr. 558:17-20 (TX748); Tr. 602:21-603:8.

16.   On May 6, 2019, Storms told Hakes, in reference to McNamara and Lancium, that "[t]here are people doing what we're trying to do in ERCOT iso in TX." Tr. 118:5-119:3; TX947 at 4000 (5/6/19, 11:11am); TX14.46. Storms then reiterated that "[t]he guys at Lancium are doing what we are trying to do exactly." TX14.47 at 5/6/19, 11:17am; TX947 at 4001; Tr. 119:7-14; *see also* Tr. 87:11-24.

17.   On May 8, 2019, McNamara again requested the "box design specs." TX742. On May 9, 2019, Storms sent a single email (TX170) with a single page specification (TX171), as well as a drawing (TX171 backside), a hard-coded spreadsheet (Tr. 565:23-566:19; TX175), and some sheets on fans and other components. TX172-174. McNamara "clicked through" the attachments, saw the box price ($94,766.33), which was "way too high"[4] and approximately 3 minutes later forwarded the email

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[4] This was without the optional real-time breakeven monitoring feature (Tr. 131:9-

to Cline and others who were more directly involved with box-manufacturer decisions as an FYI for a data point, indicating the box was "very expensive." Tr. 565:11-22; TX770; TX157.01; *see also* 391:20-392:24. McNamara estimates that he looked at Storms' materials for "no more than three minutes." Tr. 567:9-23; TX170; TX770. Cline received the email (TX770), opened the specification—but does not recall opening the Spreadsheet—and concluded that Storms' box was too expensive, too small, and lacked critical safety features.[5] Tr. 488:17-491:5 (discussing TX770), 518:24-519:3; *see also* Tr. 129:24-131:8; TX887 at 91; Tr. 308:9-310:3; TX157.02. Based on these conclusions Lancium did not follow up. Tr. 491:6-10; 568:4-8.

18.   Storms agreed that in their text messages, McNamara did not ask for specifications on his PDUs or logic design (Tr. 125:1-4; TX950 at 5/8/19 at 1:05pm), which Storms testified at deposition were not the boxes. Tr. 123:9-124:8. Storms also agreed that the Drawing is not part of the product specifications (Tr. 132:12-15; TX887 at 92), and the Spreadsheet does not relate to box specifications. Tr. 126:23-127:16; TX887 at 97; TX887-1.

19.   On May 14, 2019, Storms described McNamara and Lancium only as being "interested in my containers" to Todd Garland. Tr. 152:16-153:14; TX945 at 3829. Storms also stated he would "ping" Lancium to try to "loop you guys in re: wind

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24; TX887 at 91), which Storms only ever simulated. Tr. 131:25-132:6.
[5] Storms agreed it is important to container manufacturers that they be safe. Tr. 120:24-121:1.

side." TX945, at 3289. But after the May 3, 2019 dinner, Storms never spoke or reached out to McNamara again. Tr. 116:5-7, 145:8-11. Storms has never met or spoken to Cline or others at Lancium. Tr. 116:8-12, 145:6-7.

20.   The only communications between Storms and McNamara were their conversations on May 3, 2019 after the Fidelity FCAT conference, their text messages between May 4, and May 9, 2019, and the email Storms sent McNamara on May 9, 2019. Tr. 115:23-116:4; 565:3-6; 418:21-419:3; TX157; TX887; TX950. Storms never showed McNamara any source code and did not show McNamara any documents at the Dinner. Tr. 115:18-22, 565:3-6; *see also* Tr. 418:21-419:3.

21.   McNamara and Cline are not aware of any discussion within Lancium regarding Storms or his Email after May 9, 2019 until this lawsuit was filed (Tr. 491:22-25, 568:2-3), and there is no evidence to the contrary. Tr. 393:20-23. Storms did not know what Lancium was doing with software (Tr. 121:14-25; TX947 at 4003 (5/6/19, 11:51am)) and never worked with Lancium. Tr. 144:25-145:7

B. Storms Did Not Conceive The Inventions Of The '433 Patent, His Idea Is Fundamentally Different

22.   Storms did not conceive the inventions of the '433 patent, and none of the evidence presented, including Storms' Email and source code, demonstrate that he did. Tr. 689:1-690:1; *see also* 642:13-643:4, 664:11-670:11; *see also* Tr. 642:13-643:4, 664:11-670:11 (source code does not support conception).

23.   ERCOT Markets. ISOs, like ERCOT, manage electrical grids and balance

supply and demand for energy. Tr. 181:19-184:5, 205:24-206:6. ERCOT operates a day-ahead energy market (DAM) for buyers and sellers of energy that is voluntary, but financially binding. Tr. 202:8-11, 202:18-20. If a load buys energy in the DAM, it has to pay for that energy, but it does not have to use that energy. Tr. 203:4-24. Instead, the load could sell that power in the real-time energy market (RTM), which is often called sell-back. Tr. 203:15-20, 203:25-204:13.

24.   ERCOT's energy markets are different markets than its ancillary services market. Tr. 201:19-21. Ancillary services, which are a type of demand response, provide capacity reserves to ensure that the system capacity meets the system demand for electricity or power (Tr. 188:7-189:19, 206:7-10, 207:16-20), and give ERCOT the ability to decrease the amount of energy being used by participating loads. Tr. 207:4-7.[6] If a qualified load resource submits an ancillary services offer and is granted an "award," which specifies minimum amounts of power the load has to use during specific time intervals during the operating day, it is obligated to use (*i.e.*, it cannot sell back) the amount of energy that is subject to the award, even if it is unprofitable to use the energy. Tr. 208:9-209:22, *see also* 189:24-190:13, 192:6-11, 207:25-208:8. A load that receives an ancillary services award is compensated by a "capacity payment," regardless of whether the load is curtailed by ERCOT. Tr.

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[6] As of May 3, 2019, Storms' only understanding of ancillary services was that peaker plants existed and could be used to turn on, almost like grid insurance. Tr. 143:4-10.

209:23-210:9, 212:5-16, 207:8-11 (describing curtailment); *see also* Tr. 190:14-24.

25.   Storms' Idea. The decision being made in Storms' Spreadsheet is whether to mine Bitcoin or sell the power back. Tr. 140:13-16: TX887 at 97; TX887-1. Storms agreed that in his simulation, the decision to mine or not mine was made by the load. Tr. 149:10-150:2-21. Storms' simulation is trying to maximize profitability. Tr. 404:10-14. Storms agreed in his simulation maintaining the load level above a certain value was not important because the intent was that the build would run at 100% if it was profitable to mine and 0% if it was more profitable to sell power back. Tr. 148:25-149:5; *see also* Tr. 149:6-9. Storms' Email did not teach that his simulated mining build must use at least a specified amount of power for a specified time period, regardless of whether it was profitable to mine Bitcoin using such power for that time period. Tr. 145:14-146:5; TX887. At trial, McClellan agreed with his deposition testimony that when asked if, in Storms' system "[i]s there a requirement that regardless of what that breakeven mining cost is, it could be negative, that the system still must use X amount of power, even if they are losing money mining Bitcoin doing it?", responded "Why would you mine Bitcoin to lose money? That doesn't make any sense. This doesn't teach that." Tr. 405:25-406:23. McClellan admitted that "the '433 patent doesn't contemplate selling back at all." Tr. 416:4-12. Sell-back is "totally separate" from demand response programs. Tr. 578:10-12.

26.   Storms' source code falls into three categories: (1) a user interface that would

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provide some manual control of a power distribution unit (PDU); (2) retrieving

publically available Bitcoin and power pricing data; and (3) simulations comparing

profitability of mining Bitcoin versus selling power. Tr. 643:5-15.

27.   Plaintiffs do not assert that the first category of Storms' code relates to the

'433 patent. In addition, all of this code is dated after May 3, 2019, does not have

functionality related to the '433 patent, and does not interact with either of the other

categories of Storms' code. Tr. 643:16-645:9; *see also* Tr. 157:18-158:7.

28.   The second category of Storms' code, which comprises the files

"DA_LMP_import.py," "DA_LMP_import_AEC.py," and "LMP_csv_import.py"

essentially automated the process of retrieving publically available information. Tr.

645:10-646:24; TX20.25, .27; TX49.

29.   The third category are simulations that compare profitability of mining

Bitcoin against selling power (Tr. 647:2-4) and includes the files "denis_logic.py"

(TX22   and   TX20.13-.19),   "denis_logic_newgen.py"   (TX20.04-.10),

"test_profit.py"   (TX20.29-.32),   "arb_main_AEC.py"   (TX24),   and

"miner_amort_breakeven.py" (TX46). Tr. 648:2-6, 655:15-656:2. This category

generally follows the same logic where: first, it retrieves publically available Bitcoin

information; second, it retrieves day-ahead and real-time energy prices; third, it

calculates a breakeven mining cost; and fourth it compares the breakeven cost to the

day-ahead and real-time energy prices. If either energy price is greater than or equal

to the breakeven cost, the code sends signals to turn off all miners connected to the system, and if not, it sends signals to turn on all miners connected to the system. Tr. 647:5-653:23, 658:23-659:3; TX22. The files in this category are all substantially similar. Tr. 656:3-9. For example, the only differences between denis_logic.py and arb_main_AEC.py are different values for some variables, like kW_load, minor differences in how data is written to a database, and other minor differences that do not impact the logic or functionality. Tr. 656:10-658:22. Other simulation files, such as test_profit.py, do not include all of the logic steps in denis_logic.py. Tr. 658:23-659:18. None of the files that analyze whether to turn miners on or off by comparing the breakeven price of Bitcoin to the real-time and day-ahead energy prices pre-date the "denis logic" files. TX20.01; TX24.05; TX46.05.

30.   Storms' code does not demonstrate conception of the elements of claims 1, 17, and 20 of the '433 patent that require "a control system configured to: [b2] receive *power option data* based … on a *power option agreement* [that] specify: (i) a set of minimum power thresholds, and (ii) a set of time intervals …, [b3] responsive to receiving the power option data, *determining* a *performance strategy* … based on … the power option data … wherein the *performance strategy* comprises a *power consumption target* … equal to or greater than the *minimum power threshold* associated with each time interval" because the code does not receive data specifying *minimum power thresholds* or data specifying time intervals, much less for

associated minimum power thresholds. Tr. 664:16-668:2. The only concept of power

usage in the code is kW_load, but that value is **hard coded**, does not change,[7] is not

received, does not have an associated time interval, is not a threshold value, and is

not measured—it is only an overestimate of power used, which applies a 5% "fudge

factor" Tr. 146:23-147:6, 297:14-22, 660:3-662:16, 665:12-666:9; *see also* Tr.

282:19-283:9, 294:22-295:6; TX24.01 at line 16; Tr. 420:12-18, 424:5-11. The code

also does not determine a performance strategy or send instructions based on

minimum power thresholds, much less responsive to receiving them. Tr. 666:24-

667:11. And the only concept of time in the simulation is that it cycles or re-runs the

simulation every 5 minutes, but that "sleep" or cycle time is fixed in the code and

not received. Tr. 666:10-19; *see also* Tr. 654:13-655:11.

31.   Storms' code does not demonstrate conception of the dependent claims for the

same reasons. Tr. 669:22-670:7. Also, as to claim 12, Storms' code does not

"provide a request to a qualified scheduling entity (QSE)" or receive power option

data in response to such a request Tr. 668:6-18. As to claim 18, Plaintiffs did not

present any evidence that Storms' code provides "instructions … to operate at an

increased frequency"; McClellan only testified "Storms' system was capable of"

doing so based on (i) publicly available code that Storms did not write and (ii) a

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[7] Storms admits the only way to change this fixed value was to "physically go in and
change the code." Tr. 146:23-147:6.

function Storms' code does not use. Tr. 371:23-372:25, 668:19-669:21; TX830.06-07. And, according to McClellan, the ordering of operations as required by claim 4 was a well-known, conventional feature in computer operations. Tr. 351:10-352:1.

C. Storms' Arbitrage Idea Was Not Confidential

32. The only information Storms provided to McNamara that he contends was confidential was the Spreadsheet. Tr. 128:2-5; Tr. 113:1-3, 116:23-25, 136:2-11; TX887 at 92; TX901 at 718. But he admitted that the information in columns A-B, D-E, G, and I-J is publicly available data. Tr. 137:4-24; TX887-1. Storms also sent similar spreadsheets (and a portion of his source code) to Todd Garland without an NDA (TX919 at 909; TX920; Tr. 150:23-151:17; Tr. 111:19-112:7), and posted his Drawing on Twitter. TX901 at 717-18.

D. Storms' Arbitrage Idea Was Not Even His Own

33. Storms and Hakes met over Twitter in late 2018 (Tr. 56:12-16, 624:11-16), began texting with each other (TX14; TX947), and became friends. Tr. 117:14-16. Hakes was a consultant to Glidepath and introduced Storms to Glidepath. Tr. 624:4-10, 17-21; *see also* Tr. 56:17-58:8; TX15; Tr. 608:5-21.[8] Hakes explained "[b]ehind the meter" (TX15 at 15.01; TX932 at 1041), and, on April 5, 2019, after giving Storms the idea of writing software code to "determine whether or not to mine based

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[8] Storms pursued a business deal with Glidepath. Tr. 63:11-12, and emailed with Glidepath throughout 2019 and into 2020. TX890; TX898; Tr. 155:1-21, 619:11-620:19; TX146; TX962; TX149, Tr. 71:23-72:22, 73:11-14, 74:6-13.

on the price of power" by looking at the LMP or locational margin price, which

Hakes thought "seems pretty simple to prototype" (Tr. 628:12-629:22; TX947 at

3975 (4/5/19 8:14-8:15am); *see also* TX14.21 at 4/5/19 8:14-8:15am; Tr. 59:7-25),

Hakes also explained LMP, PPA (power purchase agreement), and "Day-Ahead

price" to Storms. TX947 at 3975-76 at 8:18am, 8:23am, and 8:27am; TX14.21-22.

34.   On April 23, 2019, Storms told Hakes that he "got the model running" and

"[t]his is one of the coolest things I've ever put together FYI – thanks for the idea."

TX947 at 3982 (4/23/19 7:18pm, 7:58pm); Tr. 633:20-634:16; see also TX14.28.

But on April 24, 2019, Storms emailed Denis Labij questions about energy markets

on issues he did not understand. Tr. 72:8-73:8; TX146. Labij responded on April 25,

2019, explaining, *inter alia*, how to perform the profitability analysis for Bitcoin

mining that Storms wanted to model, including explaining the need to calculate a

Bitcoin breakeven price, how to calculate the revenue that could be earned by selling

back power in the real-time market, and how to compare the profitability of mining

to sell-back. Tr. 615:2-619:10; TX962; Tr. 610:8-615:1. Although Storms testified

that he learned "[n]othing in particular" from Labij's email (Tr. 73:11-74:3), Storms'

April 26, 2019 response indicates otherwise: "it [Labij's response] helps

tremendously in my understanding of how these markets work." TX149.01; Tr. 74:6-

13. And, after receiving Labij's answers, Storms writes to Hakes "*I* figured out [the]

breakeven calcs … easy to integrate that logic…." TX947 at 3989 at 5:09pm.

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35.   Several of Storms' source code files are titled "denis_logic.py" and "denis_logic_newgen.py" and Storms admitted that parts of this code relate to his conversations with Denis Labij. Tr. 160:20-161:25; TX20.01; TX22.05.

36.   Storms admitted that he was not the first person to look at energy cost to mine Bitcoin versus the revenue that could be earned mining Bitcoin and to make a decision whether to mine or not based on profitability. Tr. 144:11-16, 613:5-615:1.

37.   McCamant admitted that comparing the real-time energy market price to the day-ahead energy price to decide whether to sell power back was a well-known form of arbitrage before May 2019 (Tr. 204:14-23) and that curtailing consumption when the price of power exceeds a certain threshold was well known before May 2019 and may be the most common form of energy arbitrage. Tr. 204:24-205:12.

E.   Storms Did Not Communicate The Inventions Of The '433 Patent To McNamara Or Cline

38.   Storms did not communicate the inventions of the '433 patent to McNamara, Cline, or Lancium, and none of the documents he emailed to McNamara or any other evidence Plaintiffs' presented demonstrate that he did. Tr. 680:11-681:5, 688:13-25, 690:2-14. As to the requirements of the dependent claims, these were either known by McNamara and Cline before McNamara met Storms and/or were not communicated by Storms to McNamara, Cline, or Lancium. Tr. 690:2-14.

39.   Plaintiffs have not presented any evidence that Storms conveyed any information relating to the '433 patent inventions at their dinner, and it is undisputed

that Storms did not convey any information relating to the '433 patent when he spoke to McNamara or in his text messages with McNamara. Tr. 126:20-22, 391:9-19. Storms admitted that none of the materials he emailed to McNamara indicate that his simulation required a certain amount of power be used by the build or that he simulated that the mining build must utilize at least a specified amount of power for a specified time period, much less do so regardless of whether it is profitable to mine Bitcoin during that specified time period. Tr. 145:14-146:5; TX887. The product specification and Drawing that Storms emailed McNamara do not indicate that the system measured the actual power being used (Tr. 135:22-136:1, 684:18-23) and Storms' system did not do so either. Tr. 420:5-11, 19-25. Storms agreed that nothing in the datasheets for hardware used in the BearBox box relates to the '433 patent. Tr. 128:9-129:8; TX887 at 93-96.

40.   Storms' Drawing is not a professional or conventional means of conveying design information. Tr. 681:9-682:15. It does not teach a system that must use a specified amount of power. Tr. 684:2-6. Although Storms and McClellan assert that it shows an electrical connection to the grid, Tr. 96:5-97:7, 168:21-169:4, 312:25-313:16, a POSA would understand the dotted line to be transmission of energy pricing information and would know that electricity and information cannot be transmitted over the same connection. Tr. 682:10-684:1.

41.   Storms' Spreadsheet uses 5 minute increments, but Storms admitted that

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energy can only be sold in the day-ahead market in hourly increments. Tr. 139:8-16.

The Spreadsheet also compares selling energy at two different points in time. Storms

admitted that the only way to sell energy that you are generating now at day-ahead

prices it to obligate yourself the previous day. Tr. 138:21-139:4. And McClellan

described the day-ahead revenue as "confusing" at his deposition. Tr. 399:13-400:8.

42.   Storms' Spreadsheet does not teach a system that has to maintain or use a

specific amount of power, it teaches a system that chooses the maximum of three

potential revenue streams. Tr. 686:9-20. Storms' Spreadsheet does not reveal the

algorithm underlining any of the calculated values, like the breakeven or revenue

values; the numbers are just hard coded. Tr. 139:17-140:12, 685:18-686:8, 686:21-

687:9, 687:15-688:1; TX887 at 97; TX887-1. Storms admitted that one cannot tell

by the data in the Spreadsheet how much power is consumed by the load in each 5-

minute interval "unless you know how it's calculated." Tr. 168:3-8. Storms also sent

a similar spreadsheet to Todd Garland who then asked "what do you factor into the

'breakeven_mining_cost'?" TX919 at 909; TX920; Tr. 151:10-17. Storms

responded by sending portions of his source code. Tr. 151:23-152:2; TX919 at 908.

43.   McClellan testified that the Spreadsheet provides "information upon which to

embark on a reverse engineering exercise of what Mr. Storms' system did" (Tr.

374:21-375:12), but the inputs and formulas used to calculate the values cannot be

reverse engineered. Tr. 688:2-10. McClellan even admitted that attempting to

determine how the breakeven value was calculated "would be fraught with trial and error." Tr. 396:1-397:16. Also, McClellan only testified that Storms' software was "capable of" meeting claim 18 because his software "could change the period at which the miners were reoptimized" (Tr. 371:11-372:25; *see also* DF31), and made a similar "could" operate statement with respect to claim 4. Tr. 351:10-352:22.

III.   PLAINTIFFS' CASE AND WITNESSES ARE NOT CREDIBLE

A.   Storms' True Motivation and Lack of Credibility

44.   On August 17, 2020, after learning of the Layer1 lawsuit (Tr. 156:5-11), Storms told co-workers at GAM he thought they should "make a public spectacle of [Lancium]." Tr. 163:1-16, 166:3-5; TX953 at 111. On August 20, 2020, Storms sent Layer1's lawyers the same information he provided to McNamara. Tr. 156:17-23; TX906. And despite being aware of the allegations Storms asserted in this case at the time he learned of the Layer1 case (Tr. 162:13-25; TX957; D.I. 103, ¶54), and despite speaking to Layer1's lawyers for "quite some time," Storms never intervened in that lawsuit. Tr. 155:25-157:6; TX906.

45.   On February 17, 2021, Storms told Todd Garland in reference to McNamara that "I'm going after him for this because it directly affects what we're doing at GAM …" and "I'm going to blackball him from the entire industry like I did to Dave Carlson." Tr. 164:9-165:2, 166:3-5; TX955 at 128. Storms previously filed a lawsuit against Mr. Carlson that was partially paid on contingency. Tr. 165:3-7. Then, on

March 8, 2021, Storms learned of Layer1's settlement with Lancium and about a day later told Garland that he had engaged a law firm from Chicago. Tr. 165:8-15; TX955 at 129. On April 14, 2021, Storms filed this lawsuit, which is largely being paid for by GAM and Garland. Tr. 165:19-21; D.I. 1.

B. McClellan's Testimony Is Not Credible And Is Misleading.

46. The Court found that prior to trial, (i) McClellan was of the opinion that the load held the option in a POA, and that a load was not required to use the MPT, and that (ii) McClellan's expert reports "did not explain how BearBox's system operated by maintaining a minimum amount of power, a load [] must use during associated time intervals; *i.e.*, the minimum power threshold as defined by the Power Option Agreement." Tr. 266:18-267:4; D.I. 247 at 3. McClellan testified that the claim construction did not change his opinions (Tr. 334:3-5), but his opinions at trial are an about-face from his earlier opinions. And despite being impeached numerous times (Tr. 408:11-414:25, *see also* 398:13-401:23, 403:10-404:9, 404:15-406:19) McClellan continued to dispute that he previously held different opinions. 409:1-8.

47. McClellan's testimony was not credible in other aspects as well.

- Despite Lancium's '632 application's discussion of blockchain technology, cryptocurrencies, specific mention of Bitcoin, and teaching that its computing systems can be instructed to perform "predetermined computational operations" (*see, e.g.*, TX13 at Abstract, ¶¶1-5, 7, 19-22, 42(Bitcoin), 69; Figs. 2, 9, claim 25), McClellan testified that the '632 application "doesn't mention Bitcoin, it doesn't talk about cryptocurrency … or a performance strategy to instruct a set of computing systems." Tr. 375:13-376:9; TX13.

- McClellan's suggestion that fixed values in Storms' source code, such as kW_load, can be changed without changing the code, and that Baer "conflates … the concept of hard coding … with code that can be adapted at run time" because "Python code runs an interpreter[,] [a]nd within the interpreter, things like global variables can be easily changed" (Tr. 380:22-383:23) was inconsistent with Storms' own admission that "the only way to change the value and the code is to actually physically go in and change the code" (Tr. 146:23-147:6). It was also misleading because, as Baer explained, only a single, fixed value of kW_load is used in the code (Tr. 660:3-661:16), and modifying the code in an interpreter is still changing the code, is not normally done, and is akin to breaking into or hacking the code. Tr. 661:17-662:16.

- McClellan's suggestion that Storms' code contemplated or had functionality to turn individual miners on or off was also misleading. *E.g.*, Tr. 280:10-281:2, 295:4-296:2. Storms' simulation only instructs miners to turn all on or all off as a group. Tr. 670:13-671:6, *see also* 662:18-664:10. Under oath during deposition, Storms' testified that he software model was not intended to be implemented by the PDUs, but by something else. Tr. 157:160:28 (specifically 160:12-18)); TX872, at 18, 21-27.

IV.   MISCELLANEOUS

48.   Lancium experts Ehsani and Baer were offered as experts without objection. Tr. 642:8-11, 678:12-18. Their credentials were discussed during trial (Tr. 674:14-678:18 and Tr. 638:19-642:11) and are summarized in their CVs. TX831; TX829. Plaintiffs did not contest that Dr. Ehsani is a POSA. 276:14-277:1; PF14.

49.   Lancium sued Layer1 for infringement of the '433 patent. The Complaint included a preliminary claim chart which, in many instances, pled infringement "upon information and belief" (TX17 at 6-14) because Lancium did not have Layer1's confidential information at the time of filing. *See, e.g.,* Tr. 605:20-606:8. The Layer1 case settled before claim construction. Tr. 165:8-11; TX955 at 129.

Dated: January 25, 2023

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